

Nova Aurigæ. By E. E. Barnard, M.A.

The first time I ever saw the object with the 36-inch was 1892 August 19. As soon as I saw it I was struck with the fact that it was really a very small nebula, "some 5'' in diameter," with a 10th-magnitude stellar nucleus. The nebulosity was very dense and whitish, and with a low power might escape notice. A setting of the wires gave the diameter of the nebulosity as 3''. The star nucleus was from 0.^m1 to 0.^m2 less than the star F of Mr. Burnham's diagram (*Monthly Notices*, vol. lii., No. 6). But with low power, as a whole, the nebula and nucleus were brighter than that star. At every observation since the nebulosity has been a striking object—the colour of nebula and nucleus being a bluish white—quite in contrast to the star F, which has appeared slightly yellow.

The light seems to have been declining very slowly. At the last observation, October 23, the nucleus was fully one magnitude less than F, and the nebulosity seemed less bright and was smaller in extent. The bluish-white colour was still strikingly marked.

To detect any motion perpendicular to the line of sight I have repeated Mr. Burnham's measures of last spring with two of his stars, so selected as to show motion if it existed.

Here are the observations, all made with the micrometer of the 36-inch:—

A and E.			A and F.		
1892.64	323°3	74''24	1892.64	32°6	85''03
.66	323°5	74'41	.66	32°8	84'76
.67	323°5	74'64	.67	32°7	84'87
.70	323°5	74'75	.70	32°6	85'04
1892.67	323°5	74'51 B4n		32°7	84'92 B4n

Mr. Burnham's measures of the same stars are:—

A and E.			A and F.		
1892.14	323°6	74''24 B3n	1892.12	32°4	85''05 B4n

A comparison of these measures do not show with certainty any motion in A. But the distance A E seems to be increasing. If this is real, and it seems to be so, it is strange that before my observations, it is not apparent, as compared with those of Mr. Burnham. Measures will be made to decide whether this motion is real, and if so, as to whether it is in A or E.

Mount Hamilton :
1892 October 24.

Discovery of a Comet by Photography. By E. E. Barnard, M.A.

On October 12 I made an exposure on the Milky Way near and west of α *Aquilæ* of 4 hours 20 minutes' duration with the Willard lens.

Upon developing the plate I found a distinct hazy trail near the middle of it, and about a quarter of a degree long. By this time the position of the object was too near the horizon to make a search for it. The next night (13th), as soon as it was dark enough, a search was made with the 12-inch, and the object was found nearly a degree south-east of the position on the photograph. A few minutes' observation showed it to be a comet in motion to the south-east. The comet was very faint in the 12-inch, about the thirteenth magnitude, round, and but little brighter in the middle. It has been carefully observed at every opportunity since.

This object is an exact representative of Class I. of short-period comets, very much resembling in appearance D'Arrest's comet.

The micrometer position on October 13 was—

1892 October 13^d 7^h 12^m 29^s Mount Hamilton M.T.

App. $\alpha = 19^{\text{h}} 33^{\text{m}} 57^{\text{s}}.56$

App. $\delta = +12^{\circ} 30' 5''.0$

From the faintness of the comet in the telescope, and the strength of its trail in the plate, it is evident that its light is mainly actinic. The plate used was a Cramer "Lightning," a very rapid and fine plate.

Mount Hamilton :

1892 October 24.

Note on the Period and Distance of the Fifth Satellite of Jupiter.

By E. E. Barnard, M.A.

This satellite was discovered here by the writer at midnight, 1892, September 9, with the 36-inch equatoreal.

From the eastern elongations of September 10 and October 21 the following periodic time results: $11^{\text{h}} 57^{\text{m}} 20^{\text{s}}.5$. Hourly motion $30''.111$.

The period of $17^{\text{h}} 36^{\text{m}}$ distributed in Europe was an error in telegraphic transmission. The period of $11^{\text{h}} 50^{\text{m}}$ sent later was erroneously derived from the observed distances of the satellite.

From seven eastern observed elongations the distance of the satellite (at east elongation) is $48''.094$ (at 5.20). This corresponds to a distance from *Jupiter's* centre of 112,510 miles. The few observed western elongations give a distance about